

FIG. 1

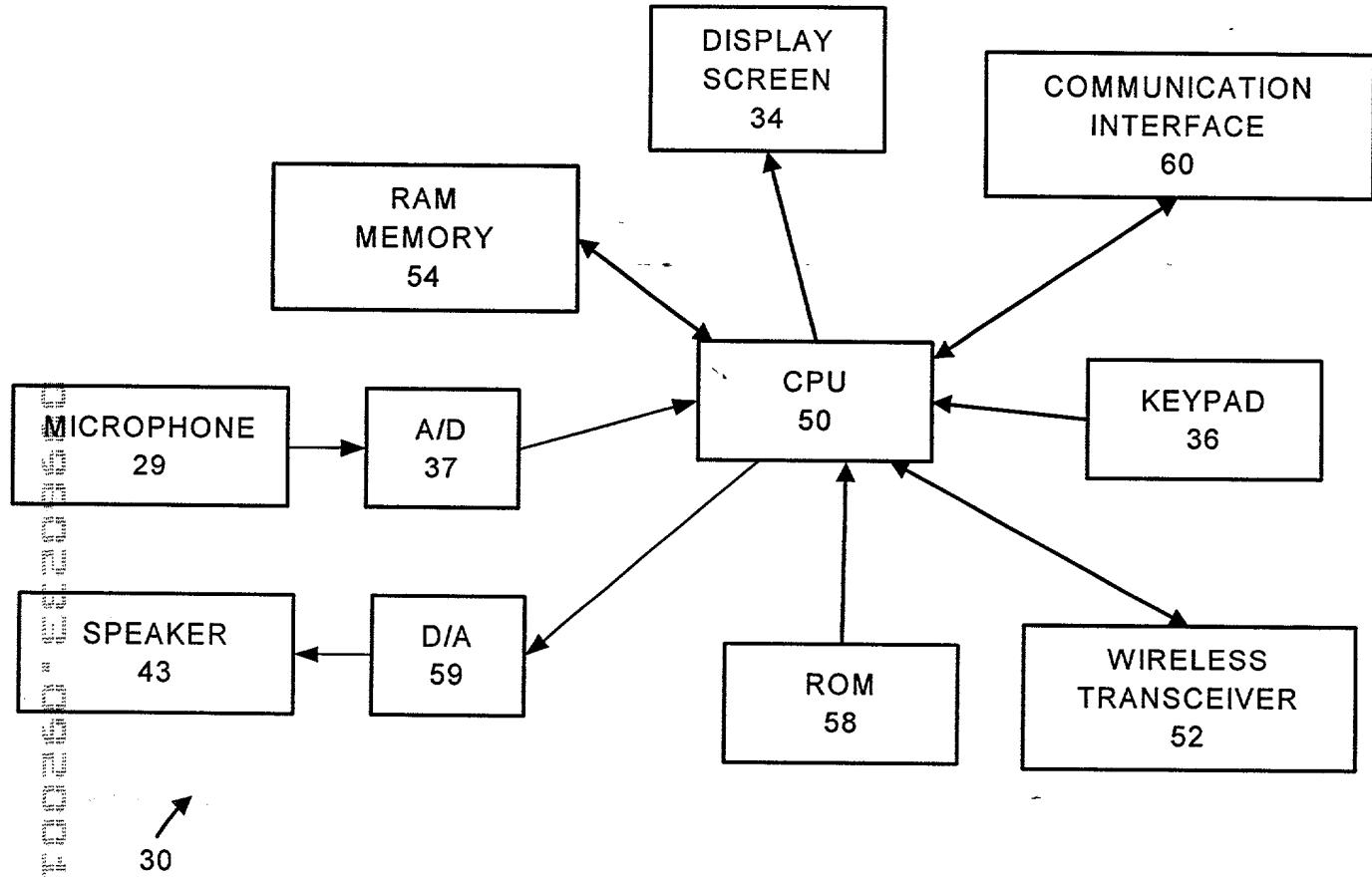


FIG.2

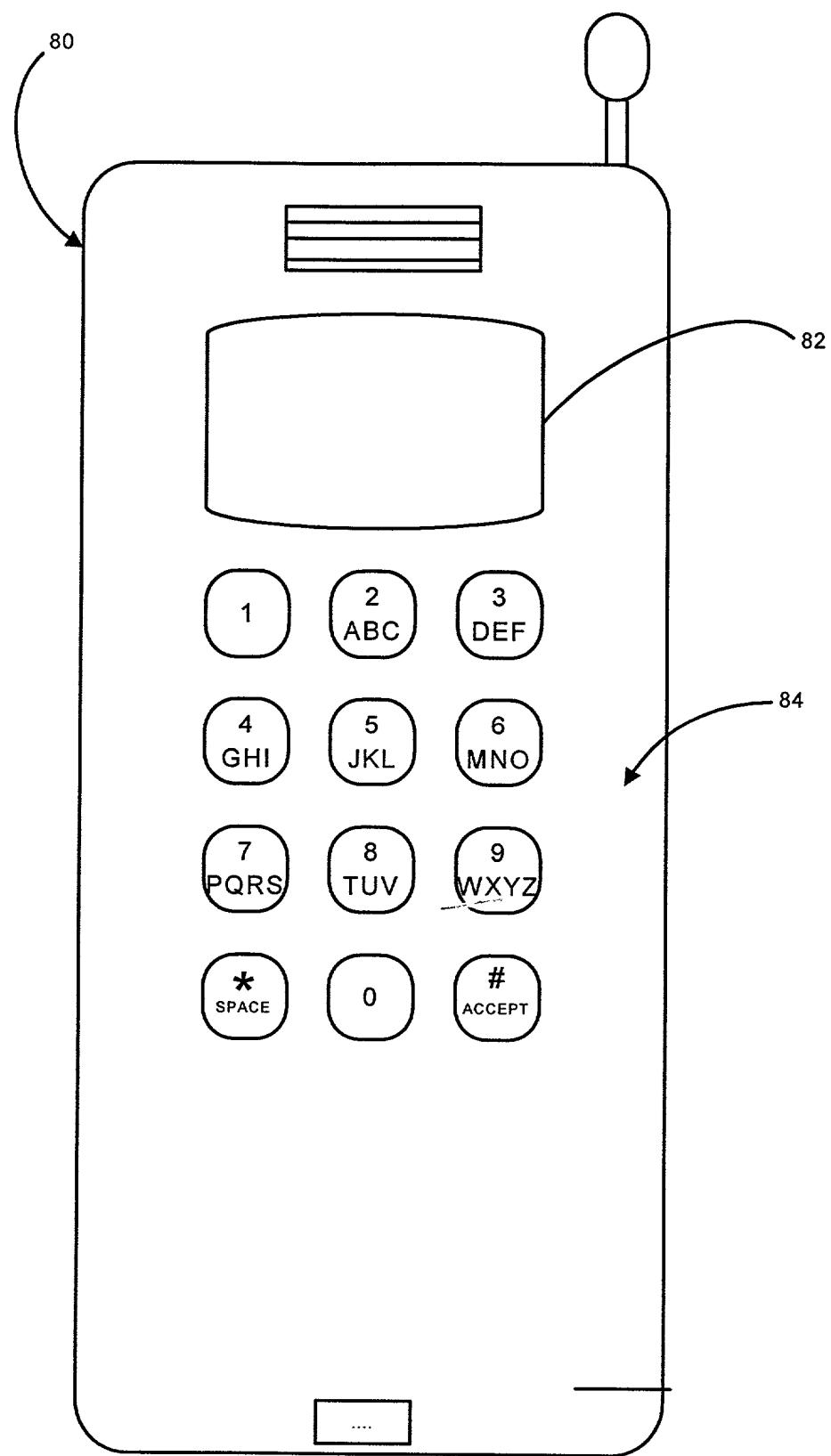


FIG. 3

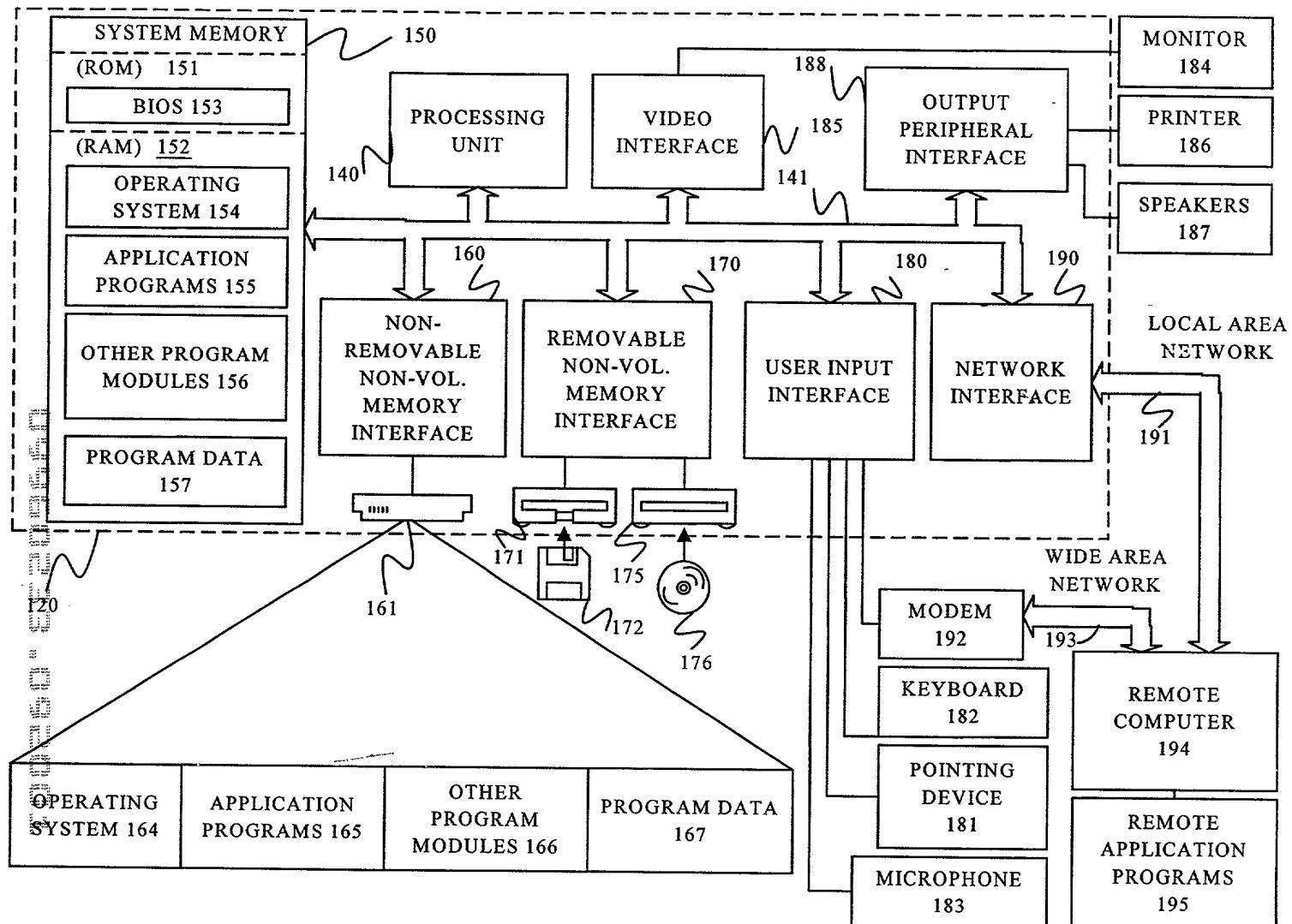


FIG. 4

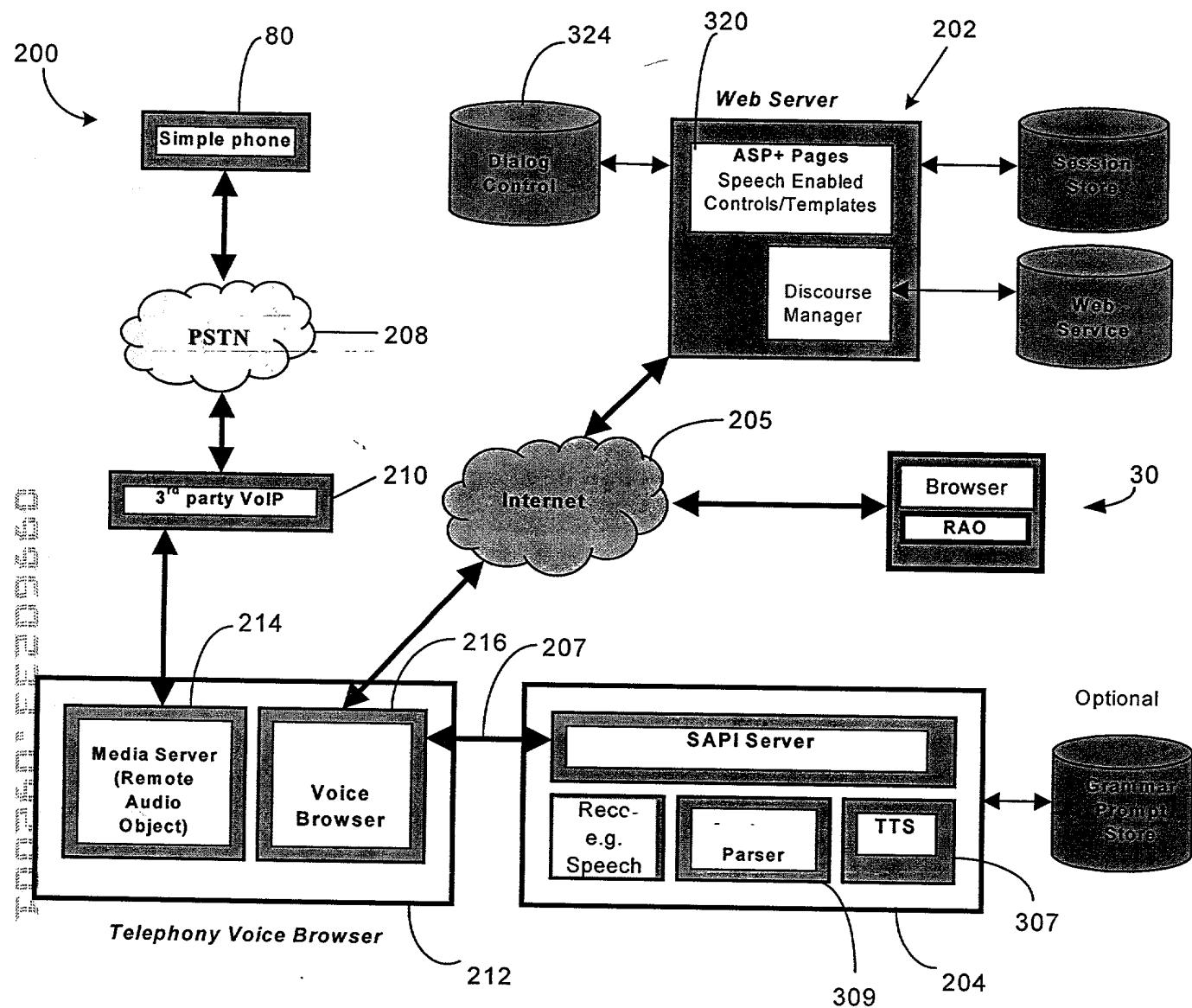


FIG. 5

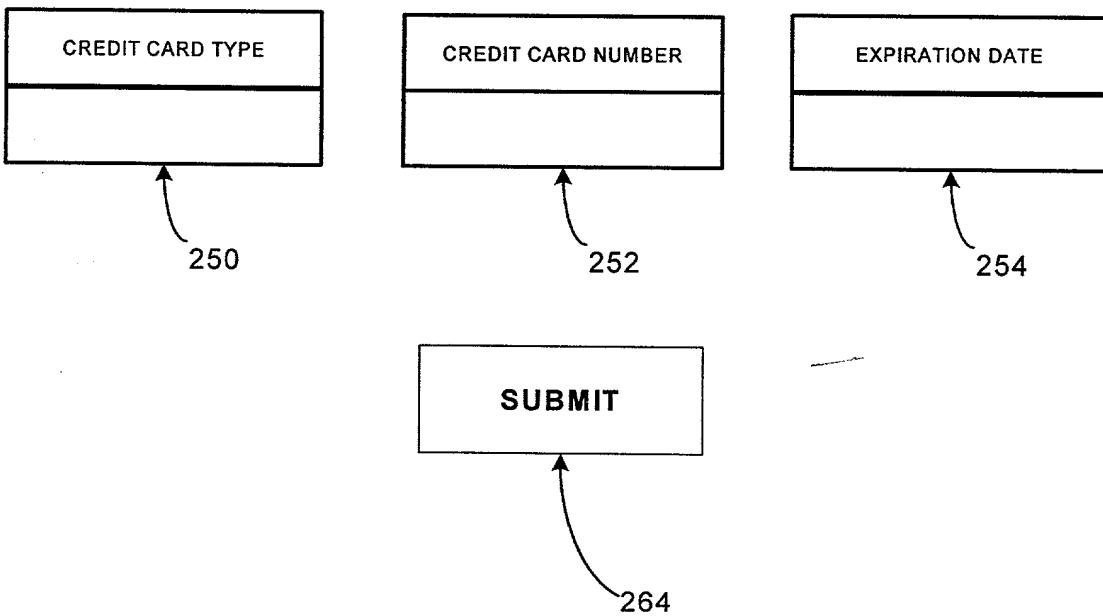


FIG. 6

```
<html>
  <form id="get_card_info" method="post" action="http://payment.asp">
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="ms">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30"
      onChange="handle()" />
    <input type="text" name="expiry_date" />
    <input type="submit" value="Submit" onClick="verify()" />
  </form>
  <script><![CDATA[
    function handle() {
      if (get_card_info.card_type.value == "amex") {
        if (get_card_info.card_num.length != 15)
          alert ("amex should have 15 digits");
      } else
        if (get_card_info.card_num.length != 16)
          alert ("visa and master should have 16 digits");
    }
    function verify() {
      var flag = window.confirm("submit the credit card info?");
      if (flag)
        get_card_info.submit();
    }
  ]]>
  </script>
</html>
```

FIG. 7

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270   <html>
        <form id="get_card_info" method="post" action="http://payment.asp">
          <select name="card_type" onClick="talk(g_card_types)">
            <option value="amex">American Express</option>
            <option value="visa">Visa</option>
            <option value="ms">MasterCard</option>
          </select>
          <reco id="g_card_types" onReco = "handle() " >
            < grammar  src=". /gram#card_types" />
          </reco >
          <input type="text" name="card_num" width="30"
                onClick="talk(g_card_num)" />
          <reco id=" g_card_num " onReco = "handle() " >
            < grammar  src=" . /gram#digits" />
          </reco >
          <input type="text" name="expiry_date"
                onClick="talk(g_expiry_date)" />
          <reco id=" g_expiry_date " >
            < grammar  src = " . /gram#dates" />
          </reco >
          <input type="submit" value="Submit" onClick="verify()" />
        </form>
        <script><![CDATA[
          function talk(gobj) {
            gobj.activate();
          }
          function handle() {
            if (get_card_info.card_num != null) {
              if (get_card_info.card_type.value == "amex") {
                if (get_card_info.card_num.length != 15)
                  alert ("amex should have 15 digits");
              } else
                if (get_card_info.card_num.length != 16)
                  alert ("visa and master should have 16 digits");
            }
            function verify() {
              var flag = window.confirm("submit the credit card
info?");
              if (flag)
                get_card_info.submit();
            }
          }
        ]]>
      </script>
    </html>

```

FIG. 8

```

<body>
<form id="get_card_info" method="post" action="http://payment.asp"
onActivate="welcom()">
<prompt id="p_welcome"> We now need your credit card </prompt>
<prompt id="p_mumble"> I didn't understand you </prompt>
<prompt id="p_card_type" bargein="true"> What credit card would you
use? </prompt>
<prompt id="p_card_num" bargein="true"> Please say the number" </prompt>
<prompt id="p_expiry_date" bargein="true"> What is the expiration
date? </prompt>
<prompt id="p_content">
    I have your <value select="card_type" /> <value select="card_num" />
    with-expiration date
    <value_select="expiry_date" />
</prompt>
<prompt id="p_confirm"> Is this correct? </prompt>
<reco id="g_card_types" onNoReco ="mumble(this, 2)">
onReco ="_handle(this, card_type)" />
<grammar src=".//gram#card_types" />
</reco>
<reco id="g_card_num" onNoReco ="mumble(this, 1)">
onReco ="_handle(this, card_num)" />
<grammar src=".//gram#digits" />
</reco>
<reco id="g_expiry_date" onNoReco ="mumble(this, 1)">
onReco ="_handle(this, expiry_date)" audio="rao" />
<grammar src=".//gram#dates" />
</reco>
<reco id="confirmation" onReco ="confirmed(this)">
<grammar src=".//gram#yesno" />
</reco>
<select name="card_type">
    <option value ="amex"> American Express </option>
    <option value ="visa"> Visa </option>
    <option value ="ms"> MasterCard </option>
</select>
<input type="text" name="card_num" width="30" />
<input type="text" name="expiry_date" />
<input type="submit" value="Submit" />
</form>
<script><![CDATA[
function welcome() {
    p_welcome.active();
    repeat = 0;
    checkFilled();
}
function mumble(gobj, maxprompts) {
    gobj.deactivate();
    p_mumble.active();
    checkFilled();
}

```

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TO FIG. 9B

FIG. 9A

```
function _handle() {
    handle();
    checkFilled();
}
function checkFilled() {
    if (card_type.value == "") {
        p_card_type.active();
        g_card_types.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.active(); g_card_num.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_data.active(); g_expiry_date.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}

function confirmed(gobj) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit();
}
// user codes start here
function handle() {
    if (get_card_info.card_type == "amex") {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else {
        if (get_card_info.card_num.length != 16) {
            prompt.speak ('visa and master should have 16 digits');
            get_card_info.card_num = "";
        }
    }
}
]]>
</script>
</body>
```

FIG. 9B

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<body>
    <form id="get_card_info" method="post" action="http://payment.asp"
        onactivate="welcome()">
        <prompt id="p_welcome">We now need your credit card</prompt>
        <prompt id="p_mumble">I didn't understand you</prompt>
        <prompt id="p_card_type" bargein="true">What credit card would you
use?</prompt>
        <prompt id="p_card_num" bargein="true">Please say the number</prompt>
        <prompt id="p_expiry_date" bargein="true">What is the expiration
date?</prompt>
        <prompt id="p_content">
            I have your <value select="card_type" /><value select="card_num" />
            with expiration date <value select="expiry_date" />
        </prompt>
        <prompt id="p_confirm">Is this correct?</prompt>
        <reco id="g_get_card_info" onReco="_handle()" onNoReco="mumble(this)">
            <grammar src ="./gram/getPayment"/>
            <bind target="card_type" value="/card/type" />
            <bind target="card_num" value="/card/number" />
            <bind target="expiry_date" value="/card/expr_date" />
        </reco>
        <reco id="confirmation" onReco ="confirmed(this) onNoReco="mumble(this)" />
            <grammar src ="./gram#yesno"/>
        </reco>
        <select name="card_type">
            <option value="amex">American Express</option>
            <option value="visa">Visa</option>
            <option value="ms">MasterCard</option>
        </select>
        <input type="text" name="card_num" width="30" />
        <input type="text" name="expiry_date" />
        <input type="submit" value="Submit" />
    </form>
    <script><![CDATA[
        function welcome() {
            p_welcome.active();
            repeat = 0;
            checkFilled();
        }
        function mumble(gobj) {
            gobj.deactivate();
            p_mumble.active();
            checkFilled();
        }
        function _handle() {
            handle();
            checkFilled();
        }
    ]]>
```

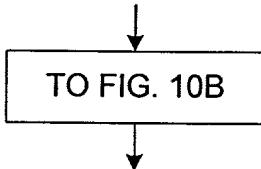
 TO FIG. 10B

FIG. 10A

```
function checkFilled() {
    if (card_type.value == "") {
        p_card_type.active(); do_field.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.active(); do_field.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_data.active(); do_field.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}
function confirmed(gobj) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit(gensml());
}
// user codes start here
function handle() {
    if (field == get_card_info.card_num) {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa should have 15 digits");
            get_card_info.card_num = "";
        }
}
function gensml() {
    str = '<sml><credit_card type="';
    str += card_type.value; str += '><number>';
    str += card_number.value; str += '</number><expire>';
    str += expiry_date.value; str +=
    '</expire></credit_card></sml>';
    return str;
}
]]>
</script>
</body>
```

FIG. 10B

SAMPLE ASP+ PAGE

```
<%@ Page language="Jscript" AutoEventWireup="false"
Inherits="Credit.Transaction" %>
<html><head>
<!-- ASPX page for both voice-only & multimodal credit card example -->
<script>
function handle() {
    if (field == get_card_info.card_num) {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa should have 15 digits");
            get_card_info.card_num = "";
        }
    }
function gensml() {
    str = '<sml><credit_card><card_type>';
    str += card_type.value; str += '</card_type><number>';
    str += card_number.value; str += '</number><expire>';
    str += expiry_date.value; str += '</expire></credit_card></sml>';
    return str;
}
</script>
<script runat="server">
function Page_Load (obj, args) {
    if (PostBack) {
        validator = new System.Speech.SMLValidator("./CreditSDL.xml");
        dsml = validator.Evaluate(args);
        Navigate(ChoosePage(dsml));
    } else {
        // initialize fields with args
    }
}
</script>
</head>
<body>
<speech:form id="get_card_info" style="system_initiative"
    prompt=".//prompt/getPayment" onsubmit="gensml()">
    <speech:choice name="card_type" prompt="What credit card would you
use?" grammar=".//gram#card_types" onPhraseFinish="handle()">
        <option>American Express</option>
        <option>Visa</option>
        <option>Mastercard </option>
    </speech:choice>
    <speech:textbox name="card_number" prompt="Please say the number"
        grammar=".//gram#digits" onPhraseFinish="handle()">
        <speech:textbox name="expiry_date" prompt="What is the expiration
date? " grammar=".//gram#dates" onPhraseFinish="handle()"/>
    </speech:textbox>
</speech:form>
</body>
</html>
```

FIG.11

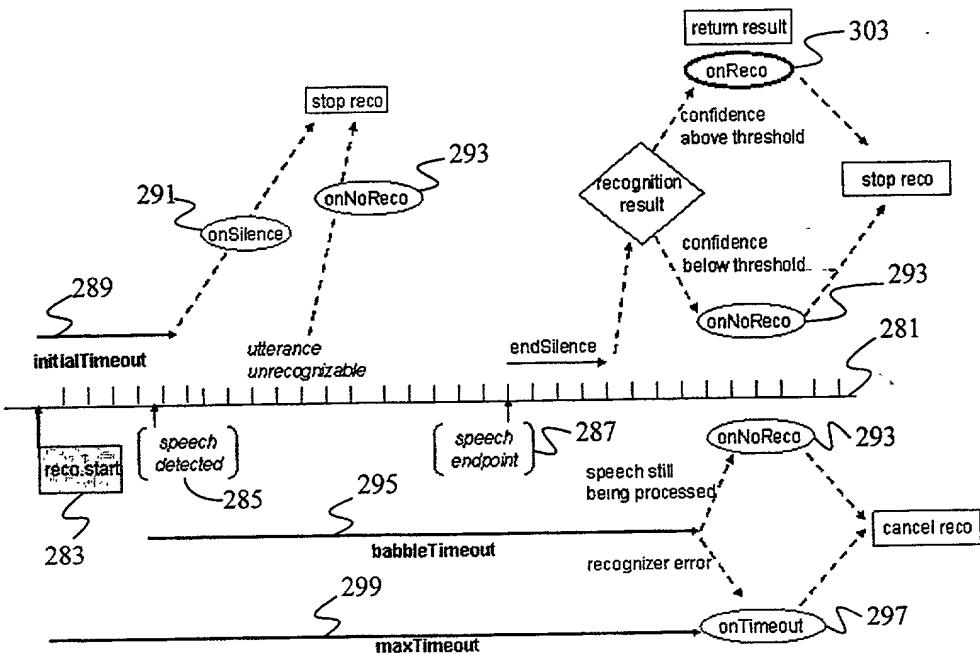


FIG. 12

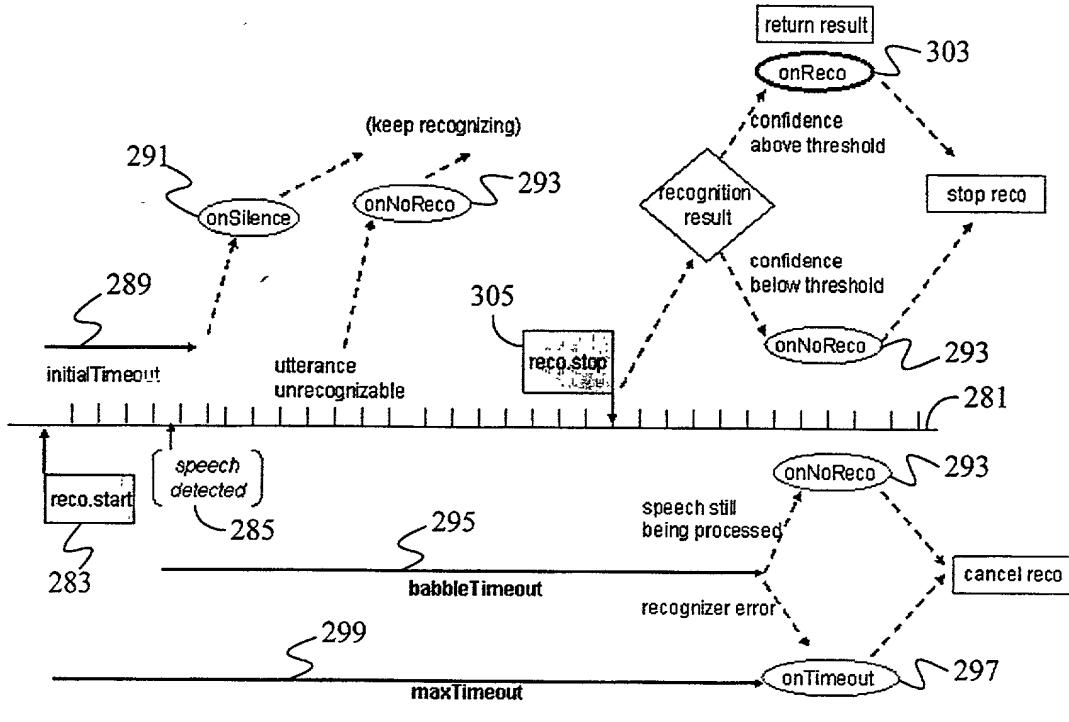


FIG. 13

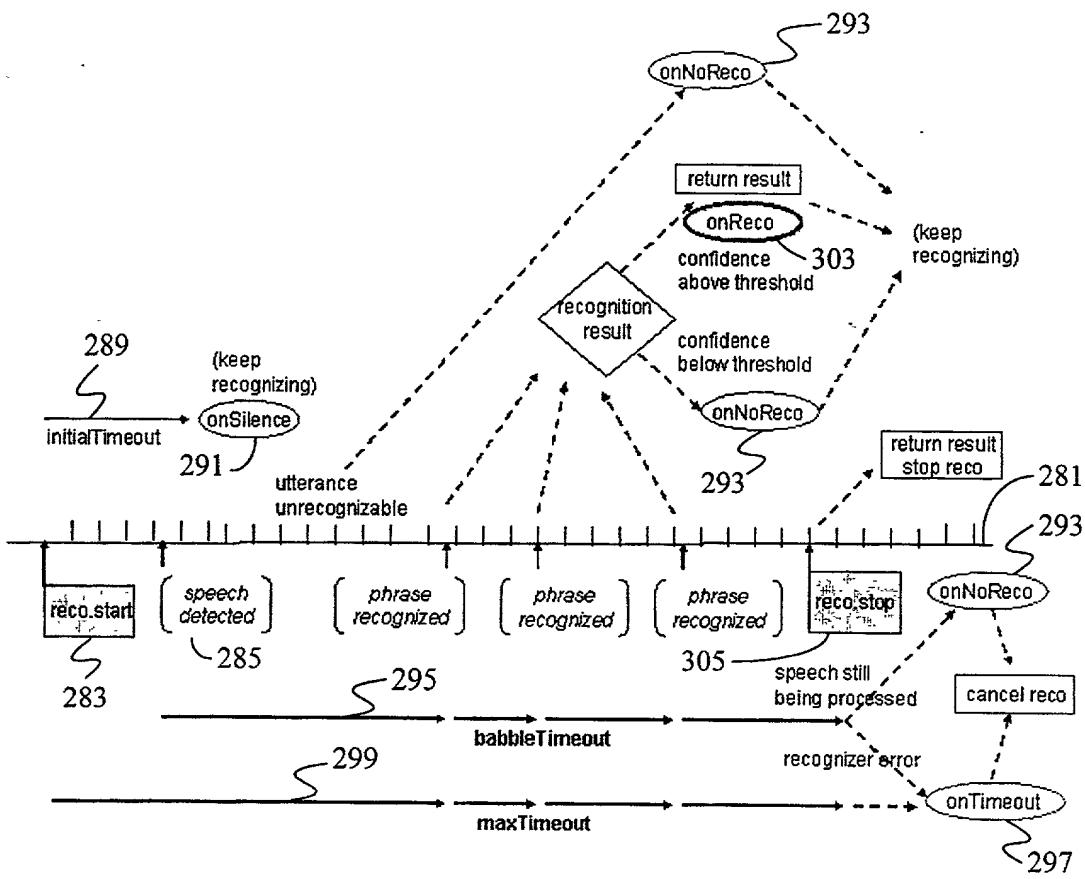


FIG. 14